Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a data network with a router having memory for storing entries for ~~a plurality of~~ destinations reachable/ accessible from the router, a method of performing packet route lookup ~~that places a bound on the number of accesses to the memory~~, the method comprising the steps of:

setting a limit (bound) on accesses to the memory to obtain a next hop address;

determining ~~the~~ search costs of all possible lookup architectures that can be constructed given the distribution of destinations in the data network:

choosing a lookup architecture which requires the minimum amount of memory to obtain the next hop address ~~of~~ any destination ~~and that places a bound on the number of memory accesses to obtain the next hop~~; and

after receipt of a data packet, using the chosen lookup architecture to determine ~~lookup~~ a route for a destination address associated with the data packet.

2. (Currently Amended) The method of claim 1 wherein the step of determining the search costs of all possible architectures further comprises the step of determining all possible lookup trees.

3. (Canceled)

4. (Original) The method according to claim 1 further comprising the step of arranging the destinations supported by the router in a tree-like architecture.

5. (Original) The method according to claim 4 further comprising the step of arranging the destinations supported by the router in a radix tree architecture.

6. (Original) The method according to claim 1 further comprising the step of storing the destinations associated with data packets as addresses.

7. (Original) The method according to claim 6 further comprising the step of storing the destinations associated with data packets as IP addresses.

8. (Currently Amended) The method according to claim 1 further comprising the step of calculating the search cost associated with performing the route lookup for a data packet.

9. (Currently Amended) The method according to claim 8 further comprising the step of determining if the search cost associated with performing the route lookup is a minimum search cost.

10. (Currently Amended) The method according to claim 9 wherein the search cost associated with performing the route lookup is based on the memory required to store the lookup architecture.

11. (Currently Amended) The method according to claim 9 wherein calculating the search cost ~~associated with performing the route lookup is calculated~~ based on a length of a destination address for the data packet.

12. (Currently Amended) The method according to claim 9 wherein calculating the search cost associated with performing the route lookup of a specific node is determined ~~calculated by summing values~~ based on a height of the specific node in the binary tree, ~~in which the node is located~~ and search costs associated with performing the route lookup of individual routes below the node for which the cost is being calculated.

13. (Currently Amended) The method according to claim 1 wherein an optimum value associated with performing the route lookup is a search cost associated with minimum memory usage in performing the route lookup.

14. (Original) The method according to claim 1 wherein the number of accesses to the memory are used to locate a destination address associated with the route.

15. (Original) The method according to claim 14 wherein the destination address is an Internet Protocol (IP) destination address.

16. – 29. (Canceled)

30. (Currently Amended) In a data network including a plurality of destinations and a plurality of routes for reaching the destinations, a router adapted to minimize the costs of route lookup for data packets routed in the data network, the router comprising:

an interface to incoming links of the data network;

logic means for

receiving incoming data packets from the data network through said interface, ~~and for~~

determining the destination of data packets,

determining the route to the next hop along a destination, and

routing data packets on a route extending to a next hop; and

a memory space accessible by the logic means and adapted for storing a lookup architecture for routes; wherein optimal ~~the~~ lookup architecture is generated that places a limit (bound) ~~bound~~ on the number of accesses to the memory space for any destination address of the data packet.

31. (Original) The router of claim 30 wherein the lookup architecture is further adapted to minimize the amount of memory required to meet any bound on accesses to the memory space for any particular destination address.

32. (Original) The router of claim 30 wherein said lookup architecture is arranged as a compressed radix tree.

33. (Original) The router of claim 30 wherein the lookup architecture stores an optimum value associated with performing the route lookup in terms of the cost associated with a minimum memory required to meet a particular bound.